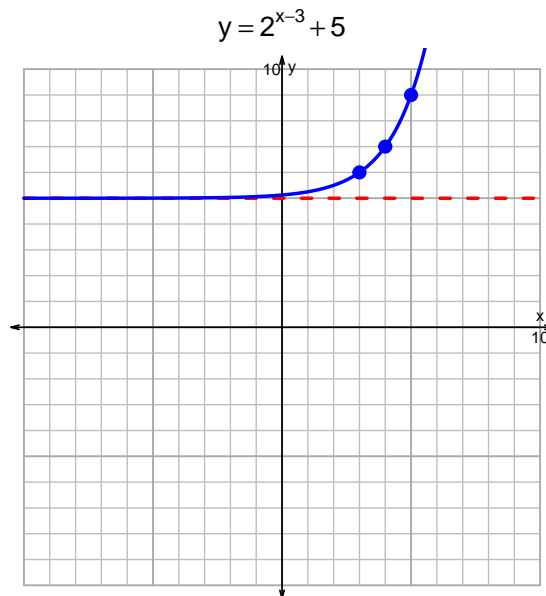
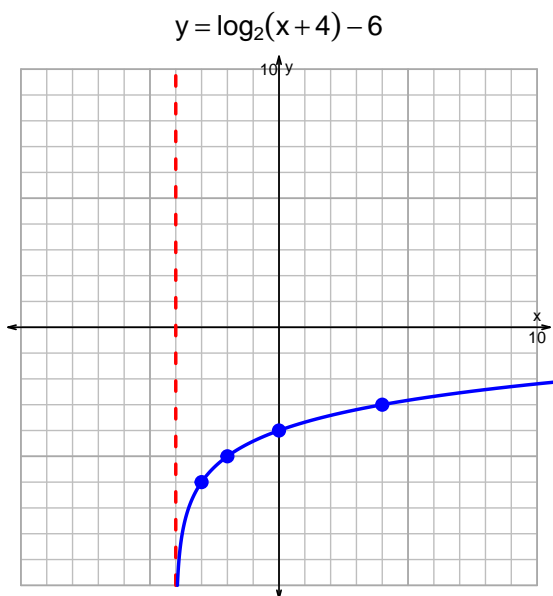


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## s18: EXP LOG (SLTN v332)

1. (10 pts) Graph  $y = \log_2(x + 4) - 6$  and  $y = 2^{x-3} + 5$  on the grids below. Also, draw any asymptotes with dashed lines.



*Somewhat useful hint:  $2^3 = 8$ , and thus  $\log_2(8) = 3$ .*

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-13 = \left(\frac{-3}{4}\right) \cdot 2^{-7t/5}$$

Divide both sides by  $\frac{-3}{4}$ .

$$\frac{13 \cdot 4}{3} = 2^{-7t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{13 \cdot 4}{3}\right) = \frac{-7t}{5}$$

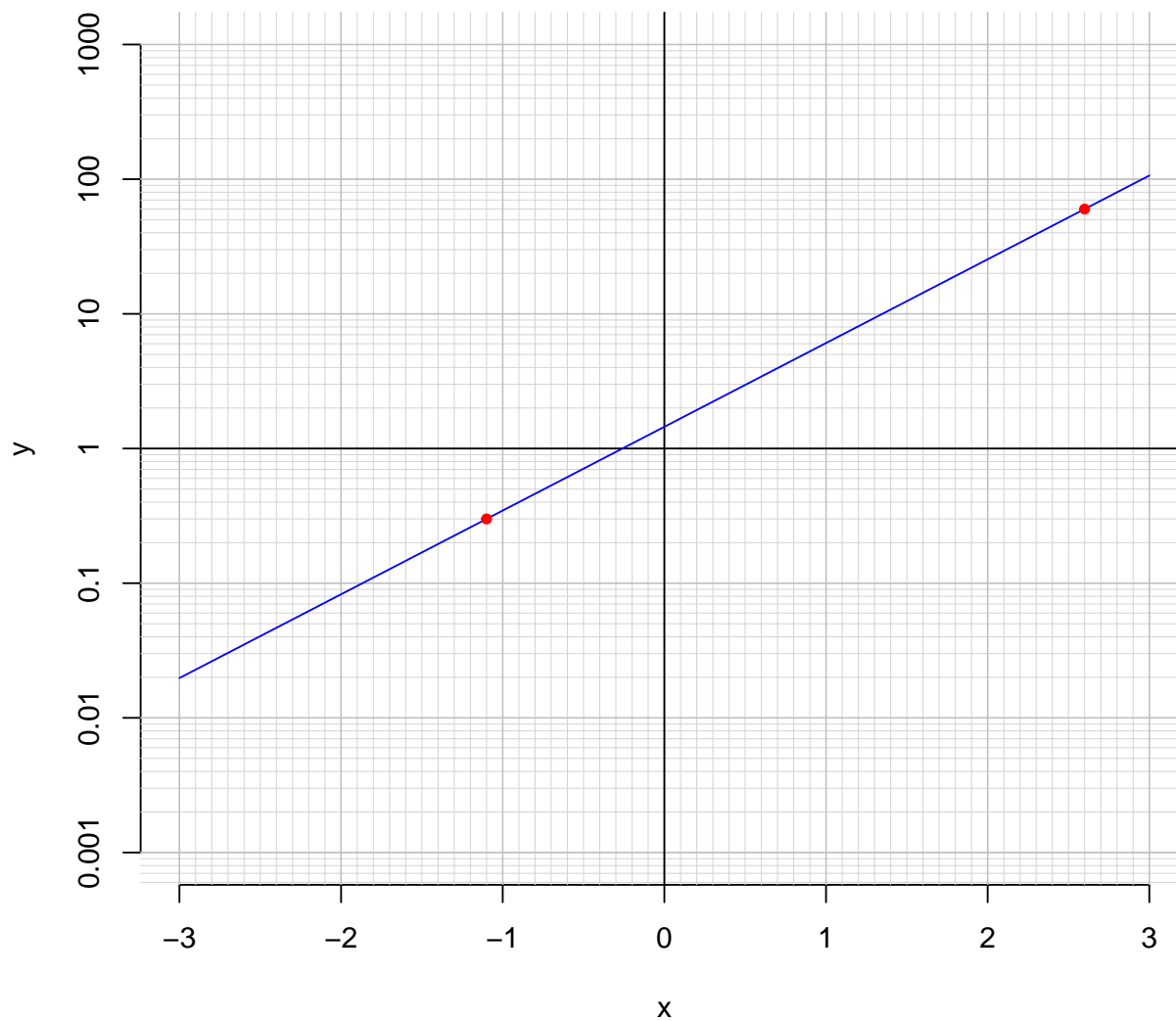
Divide both sides by  $\frac{-7}{5}$ .

$$\frac{-5}{7} \cdot \log_2\left(\frac{13 \cdot 4}{3}\right) = t$$

Switch sides.

$$t = \frac{-5}{7} \cdot \log_2\left(\frac{13 \cdot 4}{3}\right)$$

3. (10 pts) An exponential function  $f(x) = 1.45 \cdot e^{1.43x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(2.6)$ .

$$f(2.6) = 60$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{1.43} \cdot \ln\left(\frac{x}{1.45}\right)$$

Using the plot above, evaluate  $f^{-1}(0.3)$ .

$$f^{-1}(0.3) = -1.1$$